

axis of the tube, and covered with a more or less thick coat of smaller spicula. In this genus the mass of the sponge is formed of small spicula, which inosculate and are united together, forming a rather hard mass pierced with numerous closed, small, uniform hexangular pores, lined internally with a thin layer formed of elongate fusiform spicula placed parallel in bungle in a more or less longitudinal direction round the inner mouth of the pores.

The main tube is smaller at the base, gradually enlarges upward, and is then subcylindrical and irregular on the surface.

When examined externally, eight or ten longitudinal ridges are observed, between which are placed a more or less regular series of unequal-sized squarish concavities; at the lower edge of each is to be observed a large round oscule, commencing with the outer surface.

APIROCALLISTES BEATRIX. (Pl. XI.)

Hab. Malacca.

We have in the British Museum an imperfect specimen of *Euplectella*, which was brought home by Capt. Sir Edward Belcher at the same time as the above.

March 9, 1858.

Dr. Gray, F.R.S., V.P., in the Chair.

The following papers were read:—

1. A MONOGRAPH OF THE GENUS *MINIOPTERIS*.

By ROBERT F. TOMES.

(Mammalia, Pl. LXV.)

Perhaps there is no order of Mammalia in which there is so great a diversity in the forms of the different species as in the *Cheiroptera*. On examining the genus *Vespertilio* in the extended form in which it is given by M. Temminck, and more recently by M. Wagner, the naturalist will find an assemblage of creatures which he will have great difficulty in making out to his satisfaction. But in endeavouring to separate them into groups or genera for the purpose of description, he will be equally puzzled. An examination of the British species merely, will illustrate the nature of the difficulty to which I refer. Take, in the first place, the common *Noctule Bat*, and the equally common *Whiskered Bat*, the one exhibiting a heavy muscular body, and strong wings capable of vigorous and sustained flight, and with jaws and teeth of sufficient size and power to masti-

cate a Cockchafer whilst on the wing with perfect ease; and the other species having a slight and feeble body, with very slender wing-bones supporting a membrane of equal delicacy, suited only for flight in sheltered spots, and with a muzzle and teeth of such small size as to be fitted only for taking minute food in such situations.

The difference between the two is quite sufficient to justify generic separation, and the work is easy so far as these two species are concerned; but unfortunately a whole host of species come in between them, and bring such a series of small modifications as to reduce the distinction to one of *degree* only; so that in attempting to separate them the results are anything but satisfactory. And it is scarcely necessary to go beyond the European list to meet with an unbroken series from the one to the other. Under these circumstances, any character which could be found sufficiently marked to show a difference apart from that of *degree*, however small it might be, would be valuable as a means of classification.

In default of any single character which might be considered sufficient for this purpose, a certain combination of characters, not in themselves sufficiently distinctive taken separately, might nevertheless, if taken collectively, answer the desired end; and further, the decision would be strengthened if we were to find that these characters were so precisely uniform in *degree*, as to afford no specific differences beyond those of the size of the animal and the quality and colour of the fur.

Such is literally the case with the group which I have now to consider. Although inhabiting widely separated localities—Europe, Asia, Africa and Australia,—its several members scarcely exhibit any greater differences than those above noted, viz. colour and size.

The genus *Miniopterus* was first proposed by Prince C. L. Bonaparte in his fine work on the Fauna of Italy, for a species which was there described as *Miniopterus Ursinii*, being regarded as new. It has however been subsequently shown by MM. Keyserling and Blasius, that this species is identical with the one described a long time previously by Natterer, in Kuhl's 'Memoir on the Bats of Germany,' under the name of *Vespertilio Schreibersii*. The specific name given by Natterer is the one now generally admitted, whilst the generic one given by Prince C. L. Bonaparte is refused or adopted according to the opinion respecting the generic distinctions.

In the following monograph the generic peculiarities will first be pointed out; and this will be followed by a detailed description of the earliest-described and best-known species—the European one,—after which the points of dissimilarity in the other species will be adverted to*.

* I am aware that some zoologists regard the Asiatic and African representatives of the genus as referable to the European one, an opinion in which I partially concur. The African one, *Vespertilio dasythrix* of Temminck, is I believe identical with *Miniopterus Schreibersii*; but the Asiatic ones occurring in the islands of the Indian Archipelago and in Australia, I believe to be perfectly distinct species.

Genus MINIOPTERIS, Bonap.—*Trilatitius*, Gray (in part).

Top of the head much elevated; face very short, concave in its longitudinal direction; muzzle obtuse, not much depressed, nostrils near together, with their upper and inner margins slightly projecting, the space between these projecting parts being slightly emarginate. This notch between the nostrils does not, however, pass downward through the upper lip, which is entire and rather prominent. The nostrils themselves are crescent-shaped and open sublaterally. From the outer side of each is a vertical notch or groove passing through the lip, but leaving its central portion entire and slightly projecting*. Lateral parts of the lip thick and overhanging.

Lower lip with a distinct and clearly defined reflex central portion, as in *Natalus*, but of much less extent.

Ears angular-round, very short; tragus short, of uniform breadth, round at the end, and curved inwards. Tail as long as the head and body. Wing-membranes extending to the *extremity of the tibiæ*. Os calcis short. Cutaneous system ample; *middle phalange of the second and third finger very short*. Fur very thick and soft.

Skull with the bony palate extending backwards as far as the molar series only. Intermaxillary bones nearly meeting in front, so as to allow space for a considerable interval on each side between the outer incisors and the canines, and leaving only a small interspace between the two inner incisors. Incisors placed across the opening between the canines.

1. MINIOPTERIS SCHREIBERSII.

Vespertilio Schreibersii, Natt. in Kuhl, Wetter. Ann. iv. 41, 1817; Desm. Mamm. p. 138, 1820; Fisch. Synop. Mamm. p. 104, 1829; Temm. Mon. Mamm. ii. p. 174, 1835-41; De Selys-Longch. Etude Micro-mamm. p. 138, 1839; Wagn. Supp. Schreib. Saugth. i. 508, 1841.

Miniopterus Schreibersii, Keys. et Blas. Wieg. Arch. v. 323, 1839; Die Wirbelthiere Europ. p. xiii. et 44, 1840; Less. Nouv. Tab. Règne Anim. p. 27, 1842.

Miniopterus Ursinii, Bonap. Faun. Ital. fasc. 21. fol. 106, 1832-42; Gray, Mag. Zool. Bot. ii. 497, 1838; De Selys-Longch. Etude Micro-mamm. p. 139, 1839; Less. Nouv. Tab. Règne Anim. p. 27, 1842.

Vespertilio Ursinii, Temm. Mon. Mamm. ii. p. 179, 1835-1841.
Vespertilio dasythrix, Temm. Mon. Mamm. ii. p. 268.

* This projecting part of the upper lip is somewhat singular. Separated by the two vertical grooves above mentioned, it is well and clearly defined, and has somewhat the appearance of the cartilaginous forepart of the palate of some Ruminants, as that of the Sheep. Its surface is conspicuously granular, and in size it exactly corresponds with the naked reflex portion of the lower lip, so that when the mouth is closed the two parts fit closely together.

Vespertilio Natalensis, Smith, South African Quart. Journ. new ser. v. 1, 1832.

Miniopterus dasythrix, Smith, Ill. Zool. S. Africa, no. 27. pl. 52, 1848; Schinz, Synop. Mamm. i. p. 166, 1844.

The crown of the head is very much elevated, and the face so much depressed as to give the appearance of a deep hollow across its middle. The muzzle is very short and round, but it is not itself much depressed, as in the flat-headed species such as the *Noctule*. From the great concavity of the middle part of the face, the muzzle appears to have an upward direction. The nostrils are small, near together, and in the specimens preserved in spirit are directed nearly straight forward; but in dried specimens they have a sublateral direction.

The ears are very short, somewhat quadrangular in form, with the angles rounded, and have their outer margin brought forward along the face in the form of a very narrow strip of membrane to near the corners of the mouth. The inner margin rises from the side of the head in a perpendicular direction for a very short distance, and then making an angle, which if not rounded off would be a right angle, proceeds outwards in nearly a straight line, and forms another similar rounded angle with the outer margin. About the middle of the outer margin is a slight hollow.

The tragus reaches fully halfway up the ear, and in actual measurement nearly equals it in length, both being viewed as simple projections and measured along their central lines. Its form is somewhat similar to that of the tragus of the common *Pipistrelle*; but it is relatively longer and narrower, of absolutely uniform breadth, and with the tip more regularly rounded. It curves inwards for the whole of its length, but most strikingly so about one-fourth of the distance from the end.

The wings are long in relation to the size of the animal, and the longest finger is fully twice the length of the fore-arm. The middle phalanges of the two longest fingers in the wing are very short, but the relative lengths of the same parts in the other fingers are not remarkable. In the relative proportions of these bones to each other, they closely resemble the same parts in *Furipterus*, but in no other group that I have had the opportunity of examining. Thumb of medium length and size, with the terminal phalange a little longer than the basal one; its claw rather strongly hooked.

The wing-membranes are attached as far as to the extremity of the tibiæ.

The hinder limbs are of medium proportion; but the feet are rather large, and have the toes of about one-half of their entire length. The claws, although of moderate size, are strongly hooked.

The tail is long, and is composed of nine vertebrae, and is fully equal in length to the head and body. It is wholly enclosed by the interfemoral membrane, which has about thirteen transverse dotted lines, which are very near together on its basal portion. All the membranes are somewhat diaphanous, but present no great peculiarities of reticulated or other markings.

The fur is soft and thick, of medium length, and rather faintly bicoloured, both above and below. That of the upper parts is dark brownish grey at the base, its terminal half paler and strongly tinged with brown. Beneath it has similarly coloured roots, with palish grey-brown tips. Such is the colour of the European examples. Those from Algeria are characterized by a strong ashy tinge over the whole of the fur, and in some specimens the pubal region is wholly ash-coloured. Examples from Lake Ngama have all the upper parts of the body of a deep brownish grey (similar in colour to the roots of the hair in the European specimens), with the extreme tips of the hairs slightly paler, but not browner. Beneath, the fur is nearly black at its base, and tipped with ash colour; and the latter colour prevails around the region of the pubes. The specimens from this locality represent the *Vesp. dasythrix* of M. Temminck, and correspond pretty accurately with his description; but specimens from the Cape are described by Dr. A. Smith as having the upper parts "intermediate between chestnut-brown and yellowish brown," and the under parts "dull pale brownish red, tinged with wood-brown and yellowish brown, in places strongly tinted with pale reddish orange." I have seen no African example of this colour.

The cerebral region of the skull is very much elevated, almost as much so as in *Furipterus*, the evenness of its convexity being interfered with only by a narrow transverse depression occupying the position of the suture uniting the occipital with the parietal bones, by a moderately developed sagittal ridge, most conspicuous on the frontal region, and by an occipital crest of similar degree of development.

The facial part of the cranium is very much depressed, and it is also considerably compressed. The intermaxillary bones are, as in *Furipterus*, more developed than is usually the case among the *Vespertilionidæ*, affording sufficient space for the incisors to be inserted in a nearly perpendicular position, and at the same time to leave a considerable interval between them and the canines. It is worthy of remark, that in this, as in the crania of the other species of the genus, the antorbital foramina are placed more forward than usual, only just behind the canines. The nasal opening is rather small, and the corresponding notch in the front of the palate proportional to it in size. The orbit is small, and the zygomatic arches have a very moderate lateral curvature. As in other species having a dome-shaped cranium, the condyloid fossæ are in a line high above that of the teeth, and the zygoma in consequence starts at an angle from the line of the dental series and passes upwards and backwards to the condyle. In those species which, like the common *Noctule*, have a flat cranium, with both the facial and cerebral surfaces in one continuous line, the dental series and the zygoma are in nearly a continuous line also.

The bony palate presents one peculiarity, viz. that it scarcely extends posteriorly beyond the last molar, whereas in the generality of the *Vespertilionidæ* it reaches as far backwards as halfway be-

tween the last molar and the condyles, and in some instances reaches even so far back as to the latter.

The lower jaw does not present any great peculiarities of structure. It has a rounded *posterior angle*, to adapt itself to the elevated position of the cranial condyles, and a distinct and well-marked *posterior process*, about halfway between the *angle* and the *condyloid process*. The *coronoid process* is of ordinary form and on a level with the *condyle*.

Viewed in front, the upper incisors are seen to be in two pairs, which are separated by a moderately wide opening in the centre, and by another of less extent on each side, between them and the canines; but the teeth in each of these pairs are placed close together. In direction, their tips point a little inwards. Seen laterally they are nearly vertical.

In form they present no remarkable deviation from what is common in the genera *Vespertilio* and *Scotophilus*: they are of nearly equal length, the two nearest the canines simple in form and somewhat blunt, the inner ones more pointed and with a kind of basal cusp or point near to the outer ones. The canines are of medium size, and conical, with but little angularity, and possessed of a moderately developed *cingulum*. The first pre-molar is small, and has a central pointed cusp, surrounded by a flattish space, from the centre of which it projects. Its general appearance is that of a diminutive canine having an exceedingly broad *cingulum*. Succeeding to this, and contiguous to the first true molar, is a tooth which may be regarded as taking the place of the sectorial tooth of the Carnivora; it is rather long and pointed, with an inner basal ring, which is considerably developed in the direction of the palate.

The true molars have nothing remarkable either in number or form.

In the lower jaw the incisors exhibit a slight deviation from the usual type. The four central ones are small and trilobed; but the two outer ones are conspicuously larger, and instead of having a thin lobated edge, have a roundish flattened crown with a transverse cleft through its centre, for the reception of the point of the outer upper incisor when the jaws are closed.

The lower canines are of the ordinary form; but it is worthy of remark, that the basal ring or collar is considerably developed, running off into a flat basal space in the direction of the first pre-molar, but rising up into a kind of blunt accessory cusp near to the large incisor already mentioned.

This form of canine cannot, however, be instanced as peculiar to the genus, since I find that the additional cusp occurs more conspicuously in some other species, as the common *Noctule Bat*, and the equally common *Long-eared Bat*; whilst in some others, as the *Kerivoula picta* and the *Barbastelle*, it appears as a mere ring of enamel around the base of the tooth.

The three following teeth are of a very simple form, conical and pointed, surrounded by a *cingulum* which is rather more developed

on the inside of the teeth than on the outer. They increase in size evenly and rapidly, so that the one contiguous to the molars is the highest tooth in the jaw, excepting the canine, and even to that it is not greatly inferior.

The only peculiarity I am able to note respecting the true molars is, that the first has its anterior inner cusp so much produced as to be nearly even with the outer anterior one, usually much the highest.

The numeration of the teeth may be thus stated:—

$$\text{In. } \frac{2-2}{6}; \text{ Can. } \frac{1-1}{1-1}; \text{ Prem. } \frac{2-2}{3-3}; \text{ Mol. } \frac{3-3}{3-3} = \frac{16}{20}.$$

The dimensions in column 1 of the following table are those of a specimen from Bannatt; 2, those of one from Sicily: both preserved in spirit. Column 3 contains the dimensions of the mutilated skeleton, which is all that remains of the type of Prince Bonaparte's *Miniopterus Ursinii*; whilst column 4 refers to a specimen collected in Algeria in 1856 by the Rev. H. B. Tristram, and very kindly presented to me; and columns 5 and 6 refer to specimens from Lake Ngama, collected by Mr. Anderson. The three last-mentioned specimens are all preserved in skin, and their dimensions are therefore less to be depended on than those of the specimens in spirit.

	1.		2.		3.		4.		5.		6.	
	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.
Length of the head and body...	2	3	2	3	.....	.....	2	9	2	4	2	3
—— of the tail	2	3	2	1	1	10	2	0				
—— of the head	0	8½	0	8½	.....	.....	0	8½	0	8½	0	8
—— of the ears	0	3	0	3	.....	.....	0	3	0	3½	0	3
—— of the tragus	0	2	0	2½	.....	.....	0	2	0	2	0	2½
—— of the fore-arm	1	9	1	9	1	8¾	1	8½	1	9	1	8½
—— of the longest finger ...	3	6	3	5	3	3	3	4	3	5	3	3
—— of the fourth finger ...	2	2	2	0	2	0	2	1	2	2	2	0
—— of the thumb	0	4	0	3	0	3½	0	3½	0	3½	0	3½
—— of the tibia	0	9	0	8½	0	7¾	0	8¾	0	8½	0	8½
—— of the foot and claws...	0	5½	5	0	0	4¾	0	5	0	4½	0	4¾
Expanse of wings	14	0	13	0	13	6	12	9	13	0	12	6

2. M. BLEPOTIS.

Vesp. blepotis, Temm. Mon. ii. p. 212, 1835-41; Müller, Over. Zoog. d. Ind. Archiv, p. 23, and table; Schinz, Synop. Mamm. i. p. 172, 1845.

Miniopterus blepotis, Blasius, Weigm. Arch. Bd. 6. p. 4, 1840.

Pipistrellus blepotis, Less. Nouv. Tab. Règn. Anim. p. 30, 1842.

Trilatitius blepotis, Gray, Ann. & Mag. N. II. v. 10. p. 258, 1842; Cat. Mam. Brit. Mus. p. 26, 1843; Zool. Voy. Samar. p. 8, 1849.

Scotophilus Morio, Gray, App. Greg's Narrat. p. 405, 1841; Cat. Mam. Brit. Mus. p. 29, 1843; Weigm. Arch. Bd. 8. p. 339, 1842; Schinz, Synop. Mamm. i. p. 192, 1844.

Vesp. Escholtzii, Waterh. Proc. Zool. Soc. 1845, p. 4.

Noctulinia ? Escholtzii, Gray, Zool. Voy. Samar. p. 9, 1849.

The following comparison of this species with the last has been made between a great number of examples of both, most of those of *M. blepotis* being preserved skins, whilst the greater part of those

of *M. Schreibersii* have been preserved in spirit. It is necessary to make this statement before proceeding further, as the foregoing description of the latter species was drawn up from the specimen in spirit, whereas the stuffed specimens of both species have been resorted to in the following comparative description. Unfortunately I have not yet obtained a sufficient number of *M. blepotis* in spirit to be able to give as many details as I could desire.

Compared with *M. Schreibersii*, the face of the present species appears more elongated, although still very short; and it is rather more pointed, and has the nostrils more prominent. The ears, too, are relatively somewhat longer.

In quality the fur is pretty similar, from whatever locality the animal may have been obtained. That of the upper parts is unicoloured, sometimes having the tips of the hairs a little paler. In *M. Schreibersii* it is bicoloured. The general colour is very dark brown, varying slightly in its hue according to the locality from which the examples have been obtained. Beneath it is bicoloured in both species. In the present one it is dark brown at the base, tipped with a paler tint of the same colour, which latter occupies the whole length of the hairs on the pubal region.

Examples from Japan have for the most part a rich umber tinge in the colour of the fur; in others from Amboyna a black-brown is the prevailing colour, still however with a reddish tinge, whilst the majority of those from Australia have the fur of a very deep brown colour without such tinge. There is, however, a remarkable variety sometimes met with in the latter country, which may be thus mentioned:—The fur of the head and fore part of the back is of the ordinary sombre colour, but that of the loins and rump is on the contrary of a bright chestnut-brown, very silky and shining, and the change from one colour to the other is not effected by a regular gradation, but takes place almost abruptly, a wavy irregular line across the loins marking the confines of the two. But in one or two specimens which I have seen, the chestnut colour extends up the middle of the back in a narrowish line, almost to the shoulders, and produces a very marked and beautiful variety*. In these specimens the region of the pubes also is lighter in colour than in the ordinarily coloured individuals.

I have not been able to examine examples of this species taken at different periods of the year, so as to follow out the notes given by M. Temminck of the seasonal changes in the colour of the fur.

Some differences are observable in the crania of this and the last

* Somewhat the same style of colouring occurs in the *Scotophilus Gouldii*, also of Australia, and in some examples there is a slight tendency towards the same peculiar division of the two colours. *Scotophilus tuberculatus* also, of New Zealand, is very similarly coloured; but the gradation from the dark fore parts to the more rufous hinder parts, is very slight and uniform.

Mr. Blyth has remarked of many of the Indian Bats, that they are subject to what he calls a *rufous phase*: perhaps this remark may be extended to the Australian examples of the present species, although why this should not equally take place with those inhabiting the islands of the Indian Archipelago, is rather difficult to decide.

species, which deserve mention. From the greater length of the muzzle, as already noticed, it might be expected that the cranium also would exhibit some corresponding elongation of its anterior part, and accordingly that is seen to be the case. On comparing the two skulls, that of *M. Schreibersii*, besides being altogether the smaller one, has the facial portion more compressed immediately in front of the orbits, and is less depressed. The posterior part of the palate also is narrower, so that the zygomatic arches spring at once *outwards* from the maxillary bones; whilst in *blepotis*, where this part of the skull is relatively broader, the zygoma passes off in a *backward* direction, scarcely making an angle with the outer surface of the maxillary bones.

Another very apparent difference consists in the much greater length and substance of the teeth, especially the canines in *M. blepotis*. In this species the upper canines are so long as to pass, when the jaws are closed, almost to the lower margins of the lower jaw, whilst in *M. Schreibersii* their points reach only to about the middle of the ramus. It is also deserving of notice, that the singularly formed outer incisors of the lower jaw exhibit the peculiarity already alluded to in a much greater degree in this species than in *M. Schreibersii*, or indeed than in any other species appertaining to the genus.

Columns 1, 2 and 3 in the following table of dimensions refer to specimens from Japan, 4 and 5 to specimens from Amboyna, and 6 to the specimen in the collection of the British Museum, from which Mr. Waterhouse took his description of *V. Escholtzii*.

	1.		2.		3.		4.		5.		6.	
	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.
Length of the head and body...	2	6	2	9	2	6	2	5	2	6	2	1
— of the tail	2	0	2	2	2	2	1	9	1	9	2	1
— of the head	0	8	0	9	0	9	0	8	0	9	0	8½
— of the ears	0	3	0	3	0	3½	0	3	0	3	0	3
— of the tragus	0	2	0	2½	0	2½	0	2½	0	2½	0	2½
— of the fore-arm	1	9	1	9	1	9	1	8	1	10	1	9½
— of the longest finger ...	3	6	3	6	3	7	3	3	3	8	3	7
— of the fourth finger ...	2	0	2	1	2	2	2	0	2	2	2	4
— of the thumb	0	4	0	4	0	4	0	3½	0	3½	0	3½
— of the tibia	0	9	0	8½	0	9	0	8	0	9	0	8½
— of the foot and claws ...	0	4	0	4½	0	4½	0	4	0	4½	0	4
Expanse of wings.....	14	0	14	0	14	0	12	6	14	0	13	6

The specimens, the dimensions of which are given in the next table, formed part of Mr. Gould's Australian collection, and were obtained at several localities. They have been selected from a considerable number as fair representatives of the so-called *Scotophilus Morio*.

	1.		2.		3.	
	in.	lin.	in.	lin.	in.	lin.
Length of the head and body ..	2	8	2	9	2	8½
— of the tail	2	2	1	9	2	3
— of the head	0	9	0	9	0	8¾

	1.	2.	3.
	in. lin.	in. lin.	in. lin.
Length of the ears	0 3 $\frac{1}{2}$	0 3 $\frac{3}{4}$	0 3 $\frac{1}{4}$
— of the tragus	0 2 $\frac{1}{4}$	0 2 $\frac{1}{2}$	0 2 $\frac{1}{2}$
— of the fore-arm	1 10	1 9 $\frac{1}{2}$	1 9
— of the longest finger . .	3 6	3 6	3 6
— of the fourth finger. . .	2 2	2 3	2 1
— of the thumb	0 3 $\frac{1}{2}$	0 4	0 4
— of the tibia	0 9	0 9	0 8 $\frac{3}{4}$
— of the foot and claws . .	0 5	0 5	0 4 $\frac{3}{4}$
Expanse of wings	13 10	14 0	13 6

3. *M. TRISTIS.*

Vespertilio tristis, Waterhouse, Proc. Zool. Soc. pt. xiii. p. 3, 1845; Gray, Zool. Voy. Samar. p. 31, 1849.

The muzzle of this species is relatively broader and more obtuse than in any other species of the genus; and this peculiarity, together with its superior size, is sufficient at once to distinguish it from the last species, which it otherwise resembles. The peculiarity pointed out by Mr. Waterhouse of having the nostrils directed sublaterally, whilst in the allied species *M. blepotis* they open almost in front, does not, I think, furnish a very valuable character in any of the species which have the glands of the upper lips much developed. When these glands are large, they often advance so far forward as to thrust the outer margins of the nostrils forward also, or at any rate to close up the vertical notch already mentioned as separating the lips from the nostrils. This gives the latter the appearance of opening directly in front; whereas the same species, when examined in a dry state, when the lips have shrunk and produced a more pointed muzzle and prominent nostrils, the latter are found to open more or less laterally. And as it is not uncommon to meet with different individuals of the same species (in this genus) having these glands developed in a slightly different degree, so it is common to observe a corresponding difference in the nostrils. A good number of examples will alone supply the necessary materials by which to distinguish truthfully the characters of allied species. It remains therefore, as I think, to be proved by the examination of a greater number of examples, that this species differs essentially in what may be called a generic peculiarity from the so-called *Vesp. Escholtzii*, or that the latter differs from the *Vesp. blepotis* of M. Temminck.

I can detect no difference in the distribution or quality of the fur from the species last described. It is unicoloured, and the general colour is very deep brown, as in the Australian specimens of *M. blepotis*. When seen in spirit, it appears to be sooty black.

As far as is at present known, this species is confined to the Philippine Islands.

	in.	lin.
Length of the head and body	2	6
——— of the tail	2	5
——— of the head	0	10½
——— of the ears	0	4
——— of the tragus	0	2¾
——— of the fore-arm	2	1
——— of the longest finger	4	3
——— of the fourth finger	2	5
——— of the thumb	0	3½
——— of the tibia	0	10
——— of the foot and claws	0	5½
Expanse of wings	15	6 or 16 in.*

4. *M. AUSTRALIS*, n. s.

This species differs from *M. blepotis* in having the face more hairy, the ears relatively smaller, and the thumb much smaller, and in being itself much smaller. The fur too of the under parts encroaches somewhat on the membranes, whilst in *M. blepotis* they are quite free from fur.

M. Temminck, speaking of the latter species, says, "La femelle n'a guère plus de 3 pouces 4 lignes (of length); envergure à-peu-près 10 pouces; antibrachium 1 pouce 6 lignes;" which statement of dimensions appears to apply with moderate accuracy to the present species. It is not, however, the female of *M. blepotis*, as I have examined specimens of both sexes, adult and immature; and if neither age nor sex will explain the great difference in size, it must be regarded as a very remarkable variety or as a distinct species. The fact of its occurrence over a very considerable range of country—the Indian islands and Australia—inhabiting alike island and continent without manifesting any difference in appearance, is very strong evidence against its being a mere variety, and in my opinion fully establishes it as a distinct species.

The general colour of the fur is very similar to that of *M. blepotis*; but the generality of specimens have a more decided rufous tinge, which is given by the tips of the hairs being paler and redder than at the base. But this is not perceivable in some individuals, and thus they are of the ordinary sombre colour of the Australian examples of *M. blepotis*.

In the following Table of Dimensions, columns 1 and 2 refer to

* It will be observed, that the dimensions I have given differ a little from those given by Mr. Waterhouse, both taken from the same specimen. But the difference is very trifling in all respects save in the expanse of the wings, and here a good deal depends upon the measurer. I have usually taken this dimension by means of a thread extended along the bones of the wings to the shoulders, and then taken the breadth between them with a pair of compasses.

If the expanse be taken in a straight line between the tips of the open wings, it must be evident that the length of this line will depend on their complete or partial expansion, and in dried specimens it is almost impossible to have them all with the wings in an exactly similar position. It is on this account that I have adopted the method just stated.

adult males, 3 to an adult female in young, 4 to a youngish male with the wing-joints imperfectly ossified, all of them being preserved in spirit in the British Museum; and column 5 to a specimen in skin in the same collection,—the whole of them having been collected in Australia by Sir G. Grey, K.C.B., and presented to the National Collection. The dimensions in column 6 have been taken from the specimen of *M. blepotis* mentioned in Dr. Gray's 'Catalogue of the Mammalia of the British Museum,' as having been received from the Leyden Museum, its country being Timor. It is probable, therefore, that this may have been mistaken by M. Temminck for the female of that species. Be this as it may, the specimen in question is certainly a *male*, and the perfectly ossified condition of the wing-joints indicates that it is *adult*.

	1.		2.		3.		4.		5.		6.	
	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.
Length of the head and body...	1	11	1	9	1	8	1	8	1	7	2	0
— of the tail	1	9	1	8	1	8	1	6	1	5	1	5
— of the head	0	8	0	7 $\frac{1}{2}$	0	7 $\frac{1}{2}$	0	7 $\frac{1}{2}$	0	7 $\frac{1}{2}$	0	7
— of the ears	0	3	.....	.....	0	3 $\frac{3}{4}$	0	3 $\frac{1}{2}$	0	3	0	3
— of the tragus	0	2 $\frac{1}{2}$	.....	.....	0	2	0	2 $\frac{1}{4}$	0	2	0	2
— of the fore-arm	1	7	1	6 $\frac{1}{2}$	1	5	1	6	1	5 $\frac{1}{2}$	1	5
— of the longest finger ...	3	0	.....	.....	2	8	2	8	2	9	2	8
— of the fourth finger ...	1	10	.....	.....	1	8	1	8	1	8	1	8
— of the tibia	0	7	.....	.....	0	7	0	7	0	6	0	6 $\frac{1}{2}$
— of the foot and claws...	0	4 $\frac{3}{4}$	.....	.....	0	3 $\frac{3}{4}$	0	3 $\frac{1}{2}$	0	4	0	3 $\frac{1}{2}$
Expanse of wings	11	8	11	0	10	6	10	7	11	0	10	6

The name under which I have described this species was given under the impression that it was exclusively a native of Australia. It was not until after I had arranged and named the specimens in the British Museum and in some other collections, that I found it to be an inhabitant of Timor (and probably other islands of the Indian Archipelago) as well as of Australia, and that the name of *australis* was not strictly appropriate. But to avoid the confusion which might possibly arise from a change of name, I have thought it desirable that it should remain unaltered.

The two species following I am unable to give as complete an account of as I could wish.

The first is exhibited in the Leyden Museum with the name of *Vesp. tibialis* affixed, but I am not aware that any description has appeared. In that collection are four specimens, all from Amboyna. A single specimen in my own collection, received also from Amboyna by MM. Verreaux, although in a somewhat mutilated condition, will nevertheless furnish a sufficiently complete description by which to recognize the species, if species it really is.

In general appearance it closely resembles *M. blepotis*, but is a trifle smaller, and moreover appears to differ remarkably in all the specimens, in having the extremity of the tibia perfectly free for nearly a third of its length. The wing-membranes do not extend beyond two-thirds of the length of the tibia, and the *os calcis* ad-

heres closely to it up to the same point, and then starts from it at nearly a right angle, so that the extremity of the limb is completely unenumbered, and appears like a slender shank.

If this peculiarity is persistent, and not due to the state of preservation, it would mark out a very distinct and good species; but it is very desirable that other specimens be examined that have been preserved in spirit, in which state they show these parts in a more natural condition. It is worthy of note, however, that all the specimens present precisely the same appearance; that is, the leg is free for the same length, and this would hardly be the case were it due to the state of the preservation merely. On the other hand, the species so closely resembles in all other respects the *M. blepotis*, that one may well hesitate and view with suspicion a species having only a single point of difference.

The following are the dimensions of the specimen in my own collection:—

	in.	lin.
Length of the head and body, about	2	6
——— of the head	0	7
——— of the ears	0	3½
——— of the tragus	0	2
——— of the fore-arm	1	6½ or 7 lin.
——— of the longest finger	2	11
——— of the fourth finger	1	8
——— of the tibia	0	7
——— of the tibia, free part	0	7
——— of the foot and claws	0	3½
Expanse of wings	11	6

The other species to which I have alluded bears considerable resemblance to the one I have called *M. australis*. A single specimen in the British Museum, received from the Stockholm Museum with the name of *Vesp. scotinus* affixed, furnishes all the information I possess respecting it, excepting that it is also labelled "Port Natal." I am not aware that any description has been published.

The fur of the upper parts is fuliginous-brown, with the tips a little paler and greyer in hue. Beneath similar, but with the tips of the fur paler, especially about the pubes. The general colour more nearly resembles the darker examples of *M. Schreibersii*, which have been described as *V. dasythrix*, than any other species; and possibly it may prove to be a small example of that species.

The examination of a single specimen does not, amongst allied species, afford sufficient evidence for a satisfactory decision; and I prefer therefore to leave undecided the claims of the present so-called species, until further information afford more ample means of deciding.

The following are the dimensions:—

	in.	lin.
Length of the head and body, about	1	10
——— of the head	0	7

	in.	lin.
Length of the ears.....	0	3
—— of the tragus.....	0	2
—— of the fore-arm.....	1	6
—— of the longest finger.....	2	4
—— of the fourth finger.....	1	11, nearly.
—— of the thumb.....	0	3 ³ / ₄
—— of the tibia.....	0	8 ¹ / ₂
—— of the foot and claws.....	0	5 ² / ₂
Expanse of wings, about.....	12	6

The plate which accompanies the present memoir illustrates some of the peculiarities of the genus of which I have given a description.

2. ON SOME NEW OR LITTLE-KNOWN SPECIES OF ACCIPITRES,
IN THE COLLECTION OF THE NORWICH MUSEUM. BY
PHILIP LUTLEY SCLATER, M.A.

At the request of Mr. J. H. Gurney, I exhibit to the meeting some interesting birds belonging to the fine series of specimens of the order Accipitres, which that gentleman has collected for the Norwich Museum. Among them appear to be several new or little-known species, concerning which I beg to offer the following remarks:—

1. URUBITINGA SCHISTACEA.

Asturina schistacea, Sund. Ofv. Af. K. Vet. Ak. Förh. 1849, p. 132.

Falco ardesiacus, Licht. in Mus. Berol.

Morphnus schistaceus, Sclater, P. Z. S. 1857, p. 261.

♂ *adultus*. *Totus nigro-cinerascens, cauda nigra, fascia media angusta margineque apicali albis: orbitis subnudis: rostri apice nigra, hujus basi cum pedibus flavis.*

Long. tota 16·0, alæ 11·0, caudæ 7·0, rostri a rictu 1·4, tarsi 3·3.

Sundeval has given an excellent description of this bird, which does not appear to have been recognized by any other writers except Prince Bonaparte. By this author it is alluded to in an article entitled "Revue générale de la classe des Oiseaux," in the 'Revue et Mag. de Zool.' for 1850, p. 474, and again in the 'Comptes Rendus' for 1855, under the specific name *ardesiacus*, the synonym "*Falco ardesiacus*, Licht. in Mus. Berol." being said to refer to it.

Of the two examples of this species belonging to the Norwich Museum, one was procured by Mr. H. W. Bates* on the Rio Javarri—a branch of the Upper Amazon; and the other, I have no doubt, from the ticket with which it is labelled, is from the interior of Bolivia. So we may conclude that the interior wood-region of Peru and Bolivia is the natural *habitat* of this species.

* See P. Z. S. 1857, p. 261.